4.1 Weather forecasts & the microclimate scale

Fact sheet objectives

- To outline factors that may be helpful in 'downscaling' weather forecasts to your property environment

Weather forecasts rely on many levels of observations – aircraft reports, remote climate observing sites, satellite imagery, and atmospheric pressure analyses. But the information from your nearest climate station is also very important.

(Photograph by Deborah Wardel)

Having a climate station in the National Climate Network right next to your property, like this one near Martinborough, is unusual.

Accurate weather forecasts for your locality rely on the forecaster understanding the differences between your environment and that of the nearest closely monitored climate station. Local features, such as hills and proximity of the sea, also play their part. Your understanding of local effects may be better than that of your forecast provider - if so, use your local knowledge to interpret weather forecasts.

Public weather forecasts

Public weather forecasts on radio and television, or in newspapers, use both categorical language (eg. 'Rain is expected tomorrow.') and qualitative statements that help with forecast interpretation (eg. 'Winds easing slowly.'). Look further into forecasts than just their 'face value' and you can find a lot of useful information.

For a start, forecasts generally talk about weather at either specific locations or at district level. For example:

The maximum temperature at Hamilton will be 17 degrees tomorrow.

- Southeasterlies are expected in Otago.

The forecasts generally include some information about the timing of events, and if some weakening or strengthening of the forecast element is expected:

- Northwesterlies strong in the afternoon.
- The rain should ease before tomorrow night.

Many forecasts contain clues about variations in expected conditions, because of local geographical features:

- The winds will be strong in exposed places.
- Severe frosts are likely inland, but frosts should be light in coastal areas.

Then there are forecasts that have a clear message that something is happening in your area, but maybe not necessarily on your property. These forecasts may include severe weather warnings:

- Scattered showers in Hawke's Bay.
- Thunderstorms are likely in the afternoon with hail at times.
- Heavy rainfall is expected in Coromandel overnight.

If you think of forecast weather situations as dynamic, that is, constantly changing in time, space and height, and try to map the impacts of that into your decision making, you can turn the 'clues' given in the examples above into information that is valuable for you, and can guide your responses to day to day weather situations.

Tailored weather forecasts

Some weather forecasting services offer tailored weather forecasts, which are designed to give you information that is specific to your locality.

These forecasts take into account the local features that may affect the climate of your particular site, including altitude, distance from the sea, and nearby significant ranges of hills or mountains.

The forecasts may also include the timing of events, and usually give you specific detail about the elements that are forecast:

- 20-30 mm of rain on Thursday morning
- 60% chance of frost tonight.
- Wet conditions, overcast with high humidity for the next three days.

Tailored weather forecasts are designed to help you manage your specific environment. They extract the impacts and affects likely in your particular microclimate from the regional scale forecast weather information, a job that you would otherwise have to do on your own.

Again, as with public forecasts, there is still the important step of local interpretation to ensure the best chance that the forecast information is reliable enough for you to act on. General weather forecasts are issued in the expectation that you will use your local knowledge to judge what the forecast conditions will mean in your locality.

Be ready for the forecast situation to happen earlier or later than predicted, or to be more or less intense than expected. That's a simple way of adding value to a forecast.

Predictability of the microclimate

So the real question out of all this is: How predictable is your local climate, on a scale that is important within your property?

Just as the weather forecast is very good at times, it can be inaccurate at other times. So why not draw up a score sheet of forecast weather conditions that are important to your farming environment, particularly thinking about things like:

- extreme hot and cold (and frost) days
- rainfall and leaf wetness
- extreme changes to microclimate conditions
- work days

You could choose a particular forecast, say once a week, that you normally listen to, and score it for at least three months. The score sheet will soon show which aspects of the forecasts are most reliable for you. You will be able to give some valuable feedback to your forecast provider!

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Example of a forecast scoring checklist

Type of forecast (examples)	***Right***	***Partly useful***	***Wrong***
Strong winds			
Overnight frost			
Tomorrow's rain (nearby)			
Tomorrow's rain (at my place)			
No rain over the next 5 days			

Useful Websites, further reading and other sources of information

Weather situation and weather forecasts:
www.metservice.co.nz/forecasts/index.asp

www.metvuw.com

www.fencepost.com/weather/nzweathermap.jhtml

www.hortplus.com

Materials developed by Hort Research and NIWA

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Summary Information

- Weather forecasts use both categorical ('event based') and descriptive ('process based') language.
- Event: 'It will rain this afternoon.'
- Process: 'A cold front is advancing from the south, bringing low temperatures and rain.'
- Both forecasts need your local knowledge to interpret timing and intensity of these events and processes, and the impacts within your specific environment.
- A weather forecast may be accurate for your general area, but not so accurate for your property.